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ISCHAEMIC HEART DISEASE

Concerns about off-pump cardiac surgery ► Off-pump surgery has become popular in recent years. It has been thought to be less invasive, and produce better outcomes. This trial randomly assigned 50 patients to undergo on-pump coronary artery bypass grafting and 54 to undergo off-pump surgery. Surgical and anaesthetic techniques were standardised for both groups. Three months later, the patients underwent coronary angiography, including quantitative analysis. The mean age of the patients was 63 years. The on-pump group received a mean of 3.4 grafts, and the off-pump group 3.1 ($p = 0.41$). There were no deaths. There was no significant difference in the median postoperative length of stay between the two groups (seven days in each group). The area under the curve of troponin T concentration was higher during the first 72 hours in the on-pump group than in the off-pump group (30.96 hr•μg/litre *v* 19.33 hr•μg/litre, $p = 0.02$). At three months, 127 of 130 grafts were patent in the on-pump group (98%), as compared with 114 of 130 in the off-pump group (88%, $p = 0.002$). The patency rate was higher for all graft territories in the on-pump group than in the off-pump group, including the left internal mammary artery graft.

▲ **Khan NE**, De Souza A, Mister R, Flather M, Clague J, Davies S, Collins P, Wang D, Sigwart U, Pepper J. A randomized comparison of off-pump and on-pump multivessel coronary-artery bypass surgery. *N Engl J Med* 2003;**350**:21–8.

GTN spray is not a diagnostic test for angina ► The belief that response of chest pain to glyceryl trinitrate (GTN) is a hard diagnostic sign is taken apart in this prospective observational study, where all patients presenting to the emergency room in a US teaching hospital with chest pain were assessed by subjective pain scoring, given GTN spray, and then re-assessed five minutes later for reduction of pain score. Around 40% of all chest pains responded to GTN. Response or lack of response did not predict the presence or absence of coronary artery disease at four month follow up, nor did it affect prognosis.

▲ **Henrikson CA**, Howell EE, Bush DE, Miles JS, Meininger GR, Friedlander T, Bushnell AC, Chandra-Strobos N. Chest pain relief by nitroglycerin does not predict active coronary artery disease. *Ann Intern Med* 2003;**139**:979-86.

SLE is associated with premature atherosclerosis ► Using electron beam computed tomography to screen for the presence of coronary artery calcification in 65 patients with systemic lupus erythematosus (SLE) (mean (SD) age 40.3 (11.6) years) and 69 control subjects (mean age 42.7 (12.6) years), coronary artery calcification was more frequent in patients with SLE (20 of 65 patients) than in control subjects (6 of 69 subjects) ($p = 0.002$). The mean calcification score was 68.9 (244.2) in the SLE patients and 8.8 (41.8) ($p < 0.001$) in controls. Concentrations of total, high density lipoprotein, and low density lipoprotein cholesterol were not raised in patients with SLE, but triglycerides ($p = 0.02$) and homocysteine ($p < 0.001$) were.

▲ **Asanuma Y**, Oeser A, Shintani AK, Turner E, Olsen N, Fazio S, Linton MF, Raggi P, Stein CM. Premature coronary-artery atherosclerosis in systemic lupus erythematosus. *N Engl J Med* 2003; **349**:2407–15.

HYPERTENSION

Treating systolic hypertension pays off ► In part of SHEP (systolic hypertension in the elderly program), 11 to 14 year death or cardiovascular event rates were compared for active ($n = 135$) and placebo ($n = 133$) arms, plus normotensive controls ($n = 187$). Carotid ultrasound and ankle blood pressures were used to identify subclinical atherosclerosis at baseline. Eleven year event rates for the control, active, and placebo groups were 35%, 47%, and 65%, respectively. Compared with controls without hypertension, the relative risk of an event was 1.6 (95% confidence interval (CI) 1.1 to 2.4) for the active treatment group and 3.0 (95% CI 2.1 to 4.4) for the placebo group. Among those with no clinical or subclinical atherosclerotic disease at baseline, the isolated systolic hypertension group assigned to active treatment had 10 year event rates similar to those of the control group (29% *v* 27%), whereas the placebo rates were much higher (69%).

▲ **Sutton-Tyrrell K**, Wildman R, Newman A, Kuller LH. Extent of cardiovascular risk reduction associated with treatment of isolated systolic hypertension. *Arch Intern Med* 2003;**163**:2728–31.

GENERAL CARDIOLOGY

HRT may reduce risk of diabetes ► In a study involving 2763 women, those with ischaemic heart disease were randomised to hormone replacement therapy (HRT) or placebo. Those women on HRT (oestrogen and progestin) had a reduced incidence of new onset diabetes over the four years of the trial (6.2% *v* 9.5%). The number needed to treat to prevent one case of diabetes was 30, with HRT possibly acting via an effect on hepatic gluconeogenesis. However, diagnosis was by a fasting glucose taken at baseline, after one year, and at the end of trial (4.1 years). No oral glucose tolerance test was done. The authors do not recommend this as a reason to start such women on HRT because of other side effects (such as deep vein thrombosis and breast cancer).

▲ **Kanaya AM**, Herrington D, Vittinghoff E, Lin F, Grady D, Bittner V, Cauley JA, Barrett-Connor E. Glycemic effects of postmenopausal hormone therapy: the heart and estrogen/progestin replacement study: a randomized, double-blind, placebo-controlled trial. *Ann Intern Med* 2003;**138**:1–9.

Even moderate aortic stenosis increases the risk of non-cardiac surgery ► A total of 108 patients with moderate (mean gradient 25–49 mm Hg) or severe (mean gradient ⩾ 50 mm Hg) aortic stenosis and 216 controls were compared during non-cardiac surgery. The main outcome measure was the composite of perioperative mortality and non-fatal myocardial infarction. There was a significantly higher incidence of the composite end point of death/myocardial infarction in patients with aortic stenosis than in patients without aortic stenosis (14% (15/108) *v* 2% (4/216), $p < 0.001$). This rate of perioperative complications was also substantially higher in patients with severe aortic stenosis compared with patients with moderate aortic stenosis (31% (5/16) *v* 11% (10/92), $p = 0.04$). After adjusting for cardiac risk factors, aortic stenosis remained a strong predictor of the composite end point (odds ratio 5.2, 95% CI 1.6 to 17.0).

▲ **Kertai MD**, Bountioukos M, Boersma E, Bax JJ, Thomson IR, Sozzi F, Klein J, Roelandt JRTC, Poldermans D. Aortic stenosis: an underestimated risk factor for perioperative complications in patients undergoing non-cardiac surgery. *Am J Med* 2003;**116**:8-13.

Automated defibrillators do not increase survival—yet ► A total of 469 patients undergoing out of hospital resuscitation by either police or firemen as first responders were randomised to being resuscitated using either automatic or standard manual defibrillators. The randomisation was achieved by dividing the geographical area concerned into two parts, each with similar proportions of firemen and policemen, and allocating manual defibrillators to one area and automatic defibrillators to the other. Two hundred and forty three patients (65% in ventricular fibrillation) were allocated to the area with automatic defibrillators, and 226 patients (67% in ventricular fibrillation) were in the control area in which standard manual defibrillators were used. The median time interval between collapse and first shock was 668 seconds in the experimental (automatic defibrillator) area and 769 seconds in the control area ($p < 0.001$). In all, 44 (18%) patients in the experimental area versus 33 (15%) patients in the control area were discharged alive from hospital (odds ratio (OR) 1.3, 95% CI 0.8 to 2.2; $p = 0.33$), 139 (57%) experimental versus 108 (48%) control patients had return of spontaneous circulation (OR 1.5, 95% CI 1.0 to 2.2; $p = 0.05$), and 103 (42%) experimental versus 74 (33%) control patients were admitted (OR 1.5, 95% CI 1.1 to 1.6; $p = 0.02$).With this apparently favourable trend towards automatic

defibrillators it is possible that a larger study may show up a survival advantage in their use.

▲ **van Alem AP**, Vrenken RH, de Vos R, Tijssen JGP, Koster RW. Use of automated external defibrillator by first responders in out of hospital cardiac arrest: prospective controlled trial. *BMJ* 2003;**327**:1312.

Journals scanned

American Journal of Medicine; American Journal of Physiology: Heart and Circulatory Physiology; Annals of Emergency Medicine; Annals of Thoracic Surgery; Archives of Internal Medicine; BMJ; Chest; European Journal of Cardiothoracic Surgery; Lancet; JAMA; Journal of Clinical Investigation; Journal of Diabetes and its Complications; Journal of Immunology; Journal of Thoracic and Cardiovascular Surgery; Nature Medicine; New England Journal of Medicine; Pharmacoeconomics; Thorax

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IMAGES IN CARDIOLOGY

Massive cardiac involvement in acute lymphatic leukemia

A 44 year old man, in complete remission after three chemotherapy courses and allogenic peripheral blood stem cell transplantation for acute lymphatic leukemia (ALL), was seen at the outpatient clinic because of chronic graft versus host disease. He was treated with corticosteroids and responded well initially. Because of continuing weight loss and an isolated increase in lactate dehydrogenase (LDH), a bone marrow biopsy was scheduled. On entering the main lobby he suffered in-hospital ventricular fibrillation and was successfully resuscitated. Electrocardiography showed a wide variety of arrhythmias (panel below), ranging from ventricular tachycardia to complete atrioventricular block with an escape rhythm originating from the posterior fascicle. On transoesophageal echocardiography multiple thickened areas in the intraventricular and intra-atrial septum were seen, partly overgrowing the anterior mitral leaflet. In addition, there were annular, less echodense lesions that correlated very well with localisation of a tumour with necrotic spots (arrows, upper right panel). Leukemic signs in the peripheral blood were absent, however the bone marrow biopsy confirmed a relapse of ALL. No further treatment options were available and the patient died the next day from ventricular fibrillation. At necropsy, several organs showed ALL involvement including extensive cardiac localisation (lower right panel). Microscopic leukemic cardiac involvement occurs in 30–37% of necropsy series and is usually associated with leukemic manifestation in the blood. Macroscopic involvement is very rare and generally clinically silent.

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